IN THE CLAIMS

Please amend the claims as follows:

1. (Currently Amended) A method ~~for identifying pathologic change in medical image data~~, comprising:

obtaining a temporal subtraction image <u>of an anatomical region of a patient</u> from two images taken at ~~different~~ <u>respective</u> times <u>separated by a time interval that is long enough to allow for pathological change in the anatomical region</u>;

extracting at least one feature from the subtraction image;

determining whether a region of interest in the subtraction image includes an abnormality <u>associated with said pathological change,</u> based on the extracted at least one feature; and

superimposing a computer-aided diagnostic symbol indicating a location of a region representing said pathologic change on at least one of the temporal subtraction image and the two images.

2. (Original) The method of Claim 1, wherein the extracting step comprises:

constructing a gray-level histogram from the temporal subtraction image;

constructing a binary image based on the gray-level histogram; and

extracting at least one feature from the gray-level histogram.

3. (Currently Amended) The method of Claim [[1]] <u>2</u>, wherein the determining step comprises:

determining a registration accuracy based on the gray-level histogram; and

distinguishing a region of pathologic change from regions with a misregistration artifact.

4. (Original) The method of Claim 1, wherein said extracting step comprises:

identifying an organ mask region; and

spatially smoothing said organ mask region.

5. (Original) The method of Claim 1, wherein said extracting step comprises:

producing a histogram of pixels in the subtraction image;

determining a threshold level based on the produced histogram;

thresholding the subtraction image using said threshold and identifying ON and OFF

pixels based on the thresholding;

identifying a contiguous region of ON pixels; and

extracting at least one of geometric or gray-level feature from said contiguous region.

6. (Currently Amended) The method of Claim 1, wherein said obtaining step

comprises:

obtaining a first dual-energy image, a first standard image, and one of a first bone

image and a first soft tissue image from the first dual-energy image at a first point in time;

obtaining a second dual-energy image, a second standard image, and one of a second

bone image and a second soft tissue image from the second dual-energy image at a second

point in time;

using the first and second standard images to obtain shift vectors to obtain image

registration;

performing temporal subtraction, using said shift vectors, on one of the first and

second bone images or one of the first and second soft tissue images to produce a temporally

subtracted image; and

outputting the temporally subtracted image.

7. (Original) The method of Claim 6, wherein said outputting step comprises:

outputting the temporally subtracted image to a display and displaying the temporally subtracted image.

8. (Original) The method of Claim 6, wherein said outputting step comprises:

outputting the temporally subtracted image to a processor; and

performing computer aided diagnosis on the subtracted image.

9. (Original) The method of Claim 8, wherein said step of performing computer aided diagnosis comprises:

identifying pathologic change in the temporally subtracted image.

10. (Currently Amended) The method of Claim 9, wherein said identifying step comprises:

~~obtaining a temporal subtraction image from two images taken at different times;~~

constructing a gray-level histogram from the ~~temporal subtraction~~ temporally subtracted image;

constructing a binary image based on the gray-level histogram;

determining a registration accuracy of the gray-level histogram; and

distinguishing a region of the pathologic change from regions with a misregistration artifact.

11. (Original) The method of Claim 8, further comprising:

superimposing a computer-aided diagnostic symbol on at least a selected one of the temporal subtraction image, the first dual-energy image, the first standard image, the first bone image, the first soft tissue image, the second dual-energy image, the second standard image, the second bone image, and the second soft tissue image; and

displaying the selected one of the temporal subtraction image, the first dual-energy image, the first standard image, the first bone image, the first soft tissue image, the second dual-energy image, the second standard image, the second bone image, and the second soft tissue image with the computer-aided diagnostic symbol superimposed thereon.

12. (Canceled)

13. (Currently Amended) A ~~tangible computer program product hosting~~ computer-readable medium storing instructions that enable a computing device to perform any one of the steps of Claims 1-11.

14. (Currently Amended) A method ~~for identifying pathologic change in medical image data~~, comprising:

obtaining a first dual-energy image, a first standard image, and one of a first bone image and a first soft tissue image from the first dual-energy image at a first point in time;

obtaining a second dual-energy image, a second standard image, and one of a second bone image and a second soft tissue image from the second dual-energy image at a second point in time;

using the first and second standard images to obtain shift vectors to obtain image registration;

performing temporal subtraction, using said shift vectors, on one of the first and second bone images or one of the first and second soft tissue images to produce a temporally subtracted image; and

outputting the temporally subtracted image.

15. (Original) The method of Claim 14, wherein said outputting step comprises:

outputting the temporally subtracted image to a display and displaying the temporally subtracted image.

16. (Original) The method of Claim 14, wherein said outputting step comprises:

outputting the temporally subtracted image to a processor; and

performing computer aided diagnosis on the subtracted image.

17. (Original) The method of Claim 16, wherein said step of performing computer aided diagnosis comprises:

identifying pathologic change in the temporally subtracted image.

18. (Currently Amended) The method of Claim [[16]] 17, wherein said identifying step comprises:

~~obtaining a temporal subtraction image from two images taken at different times;~~

constructing a gray-level histogram from the ~~temporal subtraction~~ temporally subtracted image;

constructing a binary image based on the gray-level histogram;

determining a registration accuracy of the gray-level histogram; and

distinguishing a region of <u>the</u> pathologic change from regions with a misregistration

artifact.

19. (Original) The method of Claim 16, further comprising:

superimposing a computer-aided diagnostic symbol on at least a selected one of the

temporal subtraction image, the first dual-energy image, the first standard image, the first

bone image, the first soft tissue image, the second dual-energy image, the second standard

image, the second bone image, and the second soft tissue image; and

displaying the selected one of the temporal subtraction image, the first dual-energy

image, the first standard image, the first bone image, the first soft tissue image, the second

dual-energy image, the second standard image, the second bone image, and the second soft

tissue image with the computer-aided diagnostic symbol superimposed thereon.

20. (Canceled)

21. (Currently Amended) A ~~tangible computer program product hosting~~ <u>computer-</u>

<u>readable medium storing</u> instructions that enable a computing device to perform any one of

the steps of Claims 14-19.

22. (Currently Amended) An apparatus ~~for identifying pathologic change in medical~~

~~image data~~, comprising:

means for obtaining a temporal subtraction image <u>of an anatomical region of a patient</u>

from two images taken at ~~different~~ <u>respective</u> times <u>separated by a time interval that is long</u>

<u>enough to allow for pathological change in the anatomical region</u>;

means for extracting at least one feature from the subtraction image;

means for determining whether a region of interest in the subtraction image includes

an abnormality <u>associated with said pathological change,</u> based on the extracted at least one

feature; and

means for superimposing a computer-aided diagnostic symbol indicating a location of

a region representing said pathologic change on at least one of the temporal subtraction image

and the two images.

23. (Previously Presented) The apparatus of Claim 22, wherein the means for

extracting comprises:

means for constructing a gray-level histogram from the temporal subtraction image;

means for constructing a binary image based on the gray-level histogram; and

means for extracting at least one feature from the gray-level histogram.

24. (Currently Amended) The apparatus of Claim [[22]] <u>23,</u> wherein the means for

determining comprises:

means for determining a registration accuracy based on the gray-level histogram; and

means for distinguishing a region of pathologic change from regions with a

misregistration artifact.

25. (Previously Presented) The apparatus of Claim 22, wherein said means for

extracting comprises:

means for identifying an organ mask region; and

means for spatially smoothing said organ mask region.

26. (Previously Presented) The apparatus of Claim 22, wherein said means for extracting comprises:

means for producing a histogram of pixels in the subtraction image;

means for determining a threshold level based on the produced histogram;

means for thresholding the subtraction image using said threshold and identifying ON and OFF pixels based on the threshold;

means for identifying a contiguous region of ON pixels; and

means for extracting at least one of geometric or gray-level feature from said contiguous region.

27. (Previously Presented) The apparatus of Claim 22, wherein said means for obtaining comprises:

means for obtaining a first dual-energy image, a first standard image, and one of a first bone image and a first soft tissue image from the first dual-energy image at a first point in time;

means for obtaining a second dual-energy image, a second standard image, and one of a second bone image and a second soft tissue image from the second dual-energy image at a second point in time;

means for using the first and second standard images to obtain shift vectors to obtain image registration;

means for performing temporal subtraction, using said shift vectors, on one of the first and second bone images or one of the first and second soft tissue images to produce a temporally subtracted image; and

means for outputting the temporally subtracted image.

28. (Previously Presented) The apparatus of Claim 27, wherein said means for outputting comprises:

means for outputting the temporally subtracted image to a display and displaying the temporally subtracted image.

29. (Previously Presented) The apparatus of Claim 27, wherein said means for outputting comprises:

means for outputting the temporally subtracted image to a processor; and

means for performing computer aided diagnosis on the subtracted image.

30. (Previously Presented) The apparatus of Claim 29, wherein said means for performing computer aided diagnosis comprises:

means for identifying pathologic change in the temporally subtracted image.

31. (Currently Amended) The apparatus of Claim 30, wherein said means for identifying comprises:

~~means for obtaining a temporal subtraction image from two images taken at different times;~~

means for constructing a gray-level histogram from the ~~temporal subtraction~~ <u>temporally subtracted</u> image;

means for constructing a binary image based on the gray-level histogram;

determining a registration accuracy of the gray-level histogram; and

means for distinguishing a region of <u>the</u> pathologic change from regions with a misregistration artifact.

32. (Previously Presented) The apparatus of Claim 29, further comprising:

means for superimposing a computer-aided diagnostic symbol on at least a selected one of the temporal subtraction image, the first dual-energy image, the first standard image, the first bone image, the first soft tissue image, the second dual-energy image, the second standard image, the second bone image, and the second soft tissue image; and

means for displaying the selected one of the temporal subtraction image, the first dual-energy image, the first standard image, the first bone image, the first soft tissue image, the second dual-energy image, the second standard image, the second bone image, and the second soft tissue image with the computer-aided diagnostic symbol superimposed thereon.

33. (Currently Amended) An apparatus for identifying pathologic change in medical image data, comprising:

means for obtaining a first dual-energy image, a first standard image, and one of a first bone image and a first soft tissue image from the first dual-energy image at a first point in time;

means for obtaining a second dual-energy image, a second standard image, and one of a second bone image and a second soft tissue image from the second dual-energy image at a second point in time;

means for using the first and second standard images to obtain shift vectors to obtain image registration;

means for performing temporal subtraction, using said shift vectors, on one of the first and second bone images or one of the first and second soft tissue images to produce a temporally subtracted image; and

means for outputting the temporally subtracted image.

34. (Previously Presented) The apparatus of Claim 33, wherein said means for outputting comprises:

means for outputting the temporally subtracted image to a display and displaying the temporally subtracted image.

35. (Previously Presented) The apparatus of Claim 33, wherein said means for outputting comprises:

means for outputting the temporally subtracted image to a processor; and

means for performing computer aided diagnosis on the subtracted image.

36. (Previously Presented) The apparatus of Claim 35, wherein said means for performing computer aided diagnosis comprises:

means for identifying pathologic change in the temporally subtracted image.

37. (Currently Amended) The apparatus of Claim [[35]] 36, wherein said means for identifying comprises:

means for obtaining a temporal subtraction image from two images taken at different times;

means for constructing a gray-level histogram from the temporal subtraction temporally subtracted image;

means for constructing a binary image based on the gray-level histogram;

means for determining a registration accuracy of the gray-level histogram; and

means for distinguishing a region of the pathologic change from regions with a misregistration artifact.

38. (Previously Presented) The apparatus of Claim 35, further comprising:

means for superimposing a computer-aided diagnostic symbol on at least a selected one of the temporal subtraction image, the first dual-energy image, the first standard image, the first bone image, the first soft tissue image, the second dual-energy image, the second standard image, the second bone image, and the second soft tissue image; and

means for displaying the selected one of the temporal subtraction image, the first dual-energy image, the first standard image, the first bone image, the first soft tissue image, the second dual-energy image, the second standard image, the second bone image, and the second soft tissue image with the computer-aided diagnostic symbol superimposed thereon.